CLAIMS

1. A seal mechanism for confining a chemical reaction in a reaction vessel having an inner volume that is accessible through a penetrable, self-sealing diaphragm covering an opening of the reaction vessel and through which reagents are injected and/or extracted, said mechanism comprising

   a movable plunger that is reversibly operable between a retracted position wherein the inner volume is accessible through the diaphragm, and an operational position in abutting contact with the diaphragm, wherein

   the plunger is effective to counteract an outward deflection of the diaphragm caused by an increase of internal pressure in the vessel.

2. The seal mechanism of claim 1, wherein the plunger is pivotally movable about an axis (C).

3. The seal mechanism of claim 1, wherein the plunger is driven for a linear motion in axial direction of the vessel.

4. The seal mechanism of claim 1, wherein the plunger is driven in a motion having a generally axial component and a generally radial component with respect to the axial direction of the vessel.

5. The seal mechanism of claim 1, wherein a pressure detecting means is supported on the plunger.

6. The seal mechanism of claim 5, wherein a pressure monitoring means is connected with the plunger and by which the plunger is controlled to apply an external pressure on the diaphragm that is related to the detected internal pressure generated by the chemical reaction in the reaction vessel.

7. The seal mechanism of claim 2, wherein a linear drive unit controls the pivoting motions and applied pressure of the plunger via a link mechanism.

8. An apparatus for performing chemical reactions, wherein one or more reaction vessels are supported and successively moved to a position for microwave energy exposure, each reaction vessel having a penetrable, self sealing diaphragm covering an opening of the reaction vessel, the apparatus having dispensing means capable of penetrating the self-sealing diaphragm for injection and/or extraction of reagents into the reaction vessel where the chemical reaction takes place, said apparatus comprising

a movable plunger arranged in the microwave exposure position, the plunger being reversibly operable between a retracted position wherein an inner volume of the vessel is accessible through the diaphragm, and an operational position in abutting contact with the self sealing diaphragm, wherein

the plunger is effective to counteract an outward deflection of the diaphragm caused by an increase of internal pressure in the vessel.

9. The apparatus of claim 8, wherein the plunger is pivotally supported to be pivoted about an axis (C).

10. The apparatus of claim 9, wherein the plunger is associated with linear drive means by which the plunger is pivoted via a link mechanism.

11. The apparatus of claim 9, wherein a pressure detecting means is supported on the plunger.

12. The apparatus of claim 10, wherein a pressure monitoring means is connected with the plunger.

13. The apparatus of claim 12, wherein the pressure monitoring means continuously dimensions the external pressure applied by the plunger relative to the detected internal pressure in the reaction vessel.

14. The apparatus of claim 8, incorporated in an automated system for performing chemical reactions, the system comprising control logic and operator interface for monitoring and evaluation of the chemical reactions.

15. A method for confining a chemical reaction in a reaction vessel that is accessible through a self-sealing diaphragm covering an opening of the reaction vessel, the method comprising the steps of injecting/extracting reagents through the self-sealing diaphragm, and applying a controllable counter pressure to an external side of the diaphragm that counteracts an outward deflection of the diaphragm caused by an increase of internal pressure in the vessel.

16. The method of claim 15, wherein a plunger is pivoted about an axis (C) between a retracted position wherein the diaphragm is accessible for injection and/or extraction by a dispensing means, and an operational position wherein the plunger is controlled to apply an external pressure in abutting contact with the self-sealing diaphragm.

17. The method of claim 15, wherein the internal pressure of the vessel is monitored.

18. The method of claim 17, wherein the external pressure applied by the plunger is continuously dimensioned in relation to the detected internal pressure.